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# An Archeological Survey of the Soil Conservation Service's Cane Creek Reservoir 18-A, Lancaster County, South Carolina

Paul E. Brockington Jr.

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# An Archeological Survey of the Soil Conservation Service's Cane Creek Reservoir 18-A, Lancaster County, South Carolina

**Keywords**

Excavations, Dams, Reservoirs, Catawba River, Cane Creek, Watersheds, Lancaster County, South Carolina, Union County, North Carolina, Archeology

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AN ARCHEOLOGICAL SURVEY OF THE SOIL CONSERVATION  
SERVICE'S CANE CREEK RESERVOIR 18-A, LANCASTER  
COUNTY, SOUTH CAROLINA

by

Paul E. Brockington, Jr.  
Research Manuscript Series 137

The University of South Carolina offers equal opportunity in its employment, admissions, and educational activities, in accordance with Title IX, Section 504 of the Rehabilitation Act of 1973 and other civil rights laws.

This study was prepared under contract from the Soil Conservation Service,  
United States Department of Agriculture.

Prepared by the  
INSTITUTE OF ARCHEOLOGY AND ANTHROPOLOGY  
UNIVERSITY OF SOUTH CAROLINA  
September, 1978

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## INTRODUCTION AND MANAGEMENT SUMMARY

As part of the work plan for Cane Creek Watershed, Lancaster County, South Carolina and Union County, North Carolina, a floodwater retarding structure has been designed for Gill's Creek, Lancaster County, by the Soil Conservation Service of the United States Department of Agriculture. Gill's Creek is a tributary of Cane Creek, which flows into the Catawba River. The location of the proposed project, designated as Cane Creek Reservoir 18A, is shown in Figure 1.

Vegetation clearing, dam and spillway construction, and normal pool inundation will affect approximately 80 acres, and will be destructive of any archeological sites in the project area. To meet requirements of the National Environmental Policy Act of 1969, Executive Order 11593, the National Historic Preservation Act of 1966 and the Archeological and Historic Preservation Act of 1974, the Soil Conservation Service contracted in February 1977 with the Institute of Archeology and Anthropology to inventory and assess historic cultural resources within the project area, and to develop a management plan to preserve and protect important data and resources.

A check of the Statewide Archeological Inventory indicated that no archeological sites or other historic resources were known for the project area; however, the project area had not been previously examined for archeological sites. Examinations of similar areas in the South Carolina Piedmont have shown sites to be present on the floodplains, terraces, and hill slopes of small stream valleys and sites were thus predicted for the project area.

Field investigations performed in March, 1977 showed three sites to be present within the project area. These sites are all spatially restricted, low-density scatters of lithic material, probably representing small, Archaic period (8,500-2,000 B.C.) campsites. All three have been disturbed by previous timbering, farming and erosion. There is little potential for further study of these sites, and none is recommended. There exists a possibility that other sites are present in the project area which were not discovered because they may be buried under relatively recent alluvial deposits on the stream floodplain below the present water table. If such deeply buried sites do exist, however, they would be relatively immune to impact from the reservoir project.

This report describes in detail the methods and results of the inventory and assessment study and presents an historic and environmental overview of the region. A final section presents a plan for archeological resource management in the project area.

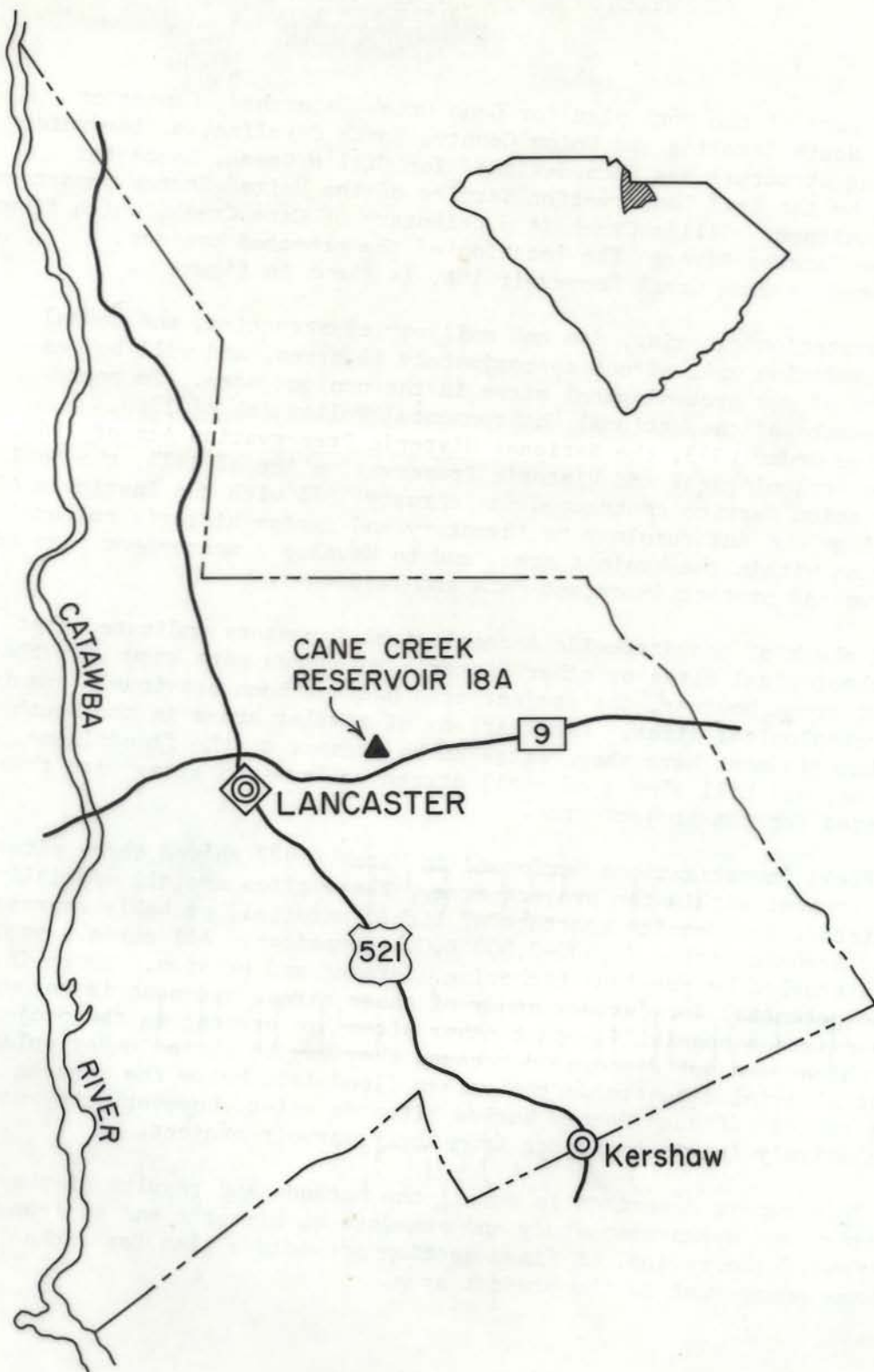


FIGURE 1. Location of Cane Creek Reservoir 18A, Lancaster County, South Carolina.



## ENVIRONMENTAL BACKGROUND

Modern anthropological and archeological research involves consideration of environment as a basic factor in human adaptation over time. The brief description presented below provides an introduction to basic variables considered important in understanding human settlement and subsistence in the area.

The project area lies within the Piedmont Province as defined by Fenneman (1938). The Piedmont Province is an area of narrow river valleys and broad interriverine zones deeply dissected by numerous small streams and intermittent drainages. Elevations near the project area range from about 450 feet in the stream valleys to 600 feet above sea level on the ridge tops. Rocks of the area include mostly gneiss, schists, argillite, and granite. Other rocks are represented in minor quantities, including veins of quartz exploitable by prehistoric human groups.

Soils in the Cane Creek watershed area have been grouped into 6 distinct associations; these are, for the most part, deep, well-drained, sandy and silty loams with clay subsoils (United States Department of Agriculture 1967). These soils have a high erosion potential and have in the past been subject to significant erosion. Soils are generally moderate to high in fertility and are suited to cotton, corn, grain and legume agriculture.

The watershed area is today dominated by a mixed pine-hardwood forest, although the potential dominant vegetation of the area is oak-hickory forest, with some mixing of pine (Shelford 1963). A great variety of herbaceous plants is also present, especially in recently cleared or disturbed areas.

Fauna in the watershed area include most species of eastern mammals, birds, and reptiles (Shelford 1963). Trout were once abundant in streams and rivers of the area, as were perch, bass, catfish and others.

The project area has a generally mild climate with a mean annual temperature of 62°F. The average growing season is 221 days, with annual precipitation of 44.8 inches (United States Department of Agriculture 1967).

In general, the present environment of the project area is rich in resources exploitable by prehistoric and historic groups. Useful stone is available for prehistoric tool manufacture and for historic building. The oak-hickory forest present in prehistoric times produced a variety of wild plant resources, including, especially, nuts and acorns, although herbaceous plants, berries, and seeds were also probably intensively exploited for food by early groups. Soils are conducive to agriculture both by late prehistoric and historic Indian groups and by early European settlers and later peoples. Fauna were probably abundant in the area in prehistoric and early historic times; most important were probably deer, raccoon, beaver,

bear, rabbit, fox squirrel, turkey and various species of fish. Fur bearing mammals were important for their hides as well as their food value, and animal bones were probably frequently fashioned into tools by prehistoric groups.

This general picture of the environment of the project area indicates resources and constraints present today and in the recent past. Climatic change over the last 25,000 years, however, has been shown to have occurred, and to have resulted in environments significantly different than that of the present day (Watts 1971; Whitehead 1973; Carbone 1974). Following, in general Olafson (1971) and Bryson, Baerreis, and Wendlund (1970), 4 major climatic episodes can be defined for the Southeast covering the last 25,000 years. These are (1) the full-glacial from 23,000 to 13,000 B.C., (2) the late-glacial from 13,000 to 8,000 B.C., (3) the post-glacial from 8,000 to 3,000 B.C., and (4) the recent period from 3,000 B.C. to the present.

During the full-glacial period temperatures were much lower than today, especially in winter, with relatively more precipitation. Vegetation in the project area was probably more boreal, with pine, spruce, and fir species dominant, although there appear to have been open areas within the forest with extensive herbaceous growth. Faunal biomass was probably considerably lower than today.

The late-glacial episode shows evidence for a shift from a boreal forest type to a general northern hardwood forest. Oak and hickory were dominant by the end of the period. Pleistocene megafauna became extinct during this episode and present day faunal communities began to dominate.

From about 8,000 to 3,000 B.C. oak-hickory forests reached their maximum development in the Piedmont. Higher temperature and lower precipitation than today are hypothesized to characterize this period, but data from the Southeast in particular are lacking. Present-day faunal communities became dominant early in this episode.

The recent climatic episode is hypothesized to be characterized by a general increase in precipitation and decrease in temperature. It is also thought to have witnessed a general shrinkage in oak-hickory forest and a resultant slight loss of floral and faunal resource productivity, especially in the Piedmont uplands.

This brief summary of environmental variables and their changes through time provides a basis for correlation with changes in the demographic, settlement, and subsistence patterns of human groups occupying the project region. Such correlations represent attempts to look for causes of social and economic change in human populations and to analyze and understand general evolutionary processes. Of particular importance at the present time is the understanding of hypothesized differential utilization, with shifts through time, of the major environmental zones of the South Carolina Piedmont: the riverine and inter-riverine regions. These questions will be addressed in more detail in the following section.

## PREHISTORIC AND HISTORIC BACKGROUND

### Prehistory

Earliest evidence of human occupation of the Piedmont region indicates that man was present by at least 10,000 B.C. (Williams and Stoltman 1965; Michie 1977). The environment during this late glacial period would have been more boreal than today, with pine forest dominant and a much lower biomass available for human exploitation. Indications are that the general Piedmont area was sparsely occupied during this time (Michie 1977).

Beginning soon after transition to the post glacial period, human occupation of the Piedmont became more intense, especially in the inter-riverine zone where recent surveys have been accomplished (House and Ballenger 1976; Goodyear 1978; Taylor and Smith 1978; Kelly 1972). Sites from this period appear to be primarily small, hunting and gathering camps in the uplands. Their appearance coincides with the trend toward dominance of oak-hickory forest in the region. In addition, most sites in this general climatic period seem to fall in the hypothesized maximum oak-hickory expansion of 5,000 to 3,000 B.C.

Sites dating after 3,000 B.C., in the recent climatic period, are fewer in number and appear to be restricted more to the major river valleys within the Piedmont. It is thought that during this period there is a general trend toward increasing sedentism, larger populations, and more labor intensive food producing strategies, including, after about A.D. 500, increasing reliance on corn agriculture (Coe 1964).

The detailed development and testing of these generalized patterns depend on future problem-oriented research in the region. Presentation of such generalized hypotheses, however, allows the development of preliminary criteria of site significance and the formulation of a basic fieldwork and analytic plan.

A general cultural-historical sequence has been formulated for prehistoric eastern North America (Griffin 1967). This general sequence has been refined and developed in more detail for the southeastern Piedmont by Coe (1964), Phelps (1964) and Wauchope (1966). Table 1, following Coe (1964) and others, presents this basic sequence as it might be expected to occur in the project area along with brief descriptions of general characteristics. Current research has focused not so much on further refinement of this cultural sequence as on determining the settlement-subsistence systems operative, particularly the nature of exploitation of the inter-riverine Piedmont during the long Archaic period (House and Ballenger 1976; Goodyear 1978; Taylor and Smith 1978; Cable, Cantley and Sexton 1978; Brooks n.d.; House and Wogaman 1978).

TABLE 1

## ARCHEOLOGICAL SEQUENCE EXPECTED IN THE PROJECT AREA\*

Date	Period	Phase	Characteristics
A.D. 1,900			Replacement by European-American homesteads and farms
A.D. 1,820	Euro-American Protohistoric		Europeanization of native technology, economy and settlement patterns.
A.D. 1,650	Mississippian		Distinctive stone tools; distinctive pottery; sedentary villages; platform mounds; maize, beans, squash agriculture with hunting and gathering.
A.D. 1,450			
A.D. 1,000		Uwharrie	Distinctive projectile points; ground stone tools; soapstone vessels; distinctive ceramics; sedentism more evident; hunting, gathering, and some horticulture.
A.D. 300	Woodland	Yadkin	
200 B.C.		Badin	
800 B.C.		Otarre Savannah River	Distinctive projectile points; ground stone tools; soapstone vessels; hunting and gathering.
2,000 B.C.	Archaic	Guilford Morrow Mountain	Distinctive projectile points; hunting and gathering; large increase in number of sites.
6,000 B.C.		Stanly Kirk Palmer Hardaway	Distinctive projectile points; hunting and gathering.
10,000 B.C.	Paleo-Indian	Clovis	Fluted projectile points; nomadic hunting (possibly of now-extinct animals) and gathering of wild plants.

\* After Coe (1964) and Keel 1976.

House and Ballenger (1976: 84-87) postulate three different extractive strategies that may have been operative in the inter-riverine Piedmont during the Archaic. These include fall-winter deer hunting and nut collecting (both in the upland hardwood forest), and fishing and plant gathering (along stream bottomlands). House and Ballenger also hypothesize that the stream bottoms may have been used as base camps for extractive journeys into the uplands in search of deer and nuts in the fall and winter. In addition, House and Ballenger (1976: 117) see a general movement of people, during the Middle and Late Archaic especially, out of the inter-riverine zone during the late winter, spring, and summer to residences along major rivers to take advantage of migratory fish and floodplain plant resources. Further research has generally upheld this basic settlement-subsistence model, although data are meager, especially for the Early Archaic (Goodyear 1978; Taylor and Smith 1978; Cable, Cantley and Sexton 1978; Brooks n.d.; House and Wogaman 1978).

Data concerning Woodland and Mississippian period occupation of the Piedmont are sparse. Present indications are, however, that resource extraction continued in the inter-riverine zone, probably concentrated in the fall and early winter, although base camps were restricted to the major river valleys (House and Ballenger 1976; Goodyear 1978; Taylor and Smith 1978; Kelly 1972). During the Woodland and Mississippian periods there was apparently a trend toward increasing sedentism, larger population, and more labor intensive exploitation of the floodplains of major rivers.

It may be noted that, in postulating general Piedmont settlement-subsistence systems for the Archaic, researchers suffer from a lack of good data concerning occupation of major river valleys. Most research has focused on the inter-riverine zone, and recent work in river valleys has not been reported in detail (see Taylor and Smith 1978; Brockington 1977). In addition, general survey data from major river valleys are most probably biased because of difficulty in detecting the probably deeply-buried archeological sites there. This problem will be discussed in more detail in a later section.

### Ethnohistory

The Ethnohistoric period, sometimes called the Ethnohistoric period, refers to the time between first contacts and influence of Europeans and the ultimate destruction or removal of native Indian groups. In the South Carolina Piedmont the Ethnohistoric period generally extends from the sixteenth century through the nineteenth century. The major Indian group near the project area was the Catawba Nation. Detailed ethnohistoric studies of the Catawba have been recently presented by Brown (1966) and Baker (1975).

Earliest contact by Europeans with the Catawba may have been by the DeSoto expedition in 1540. The DeSoto chronicles describe, in particular, the Province of Cofitachiqui (Swanton 1952), apparently a thriving, pristine Mississippian society. There is evidence that Cofitachiqui was located on the upper Wateree-Catawba River, just south of the project area (Baker 1975). Indian groups of the area were also contacted by the Spanish Juan Pardo expedition in 1566 and 1567 (Brown 1966; Baker 1975). After this, contact was apparently at a minimum for about 100 years when trade began to develop with Europeans operating out of Virginia, and later, South Carolina. An early account of the Indians of the South Carolina Piedmont is presented by Lawson (1952) in his diary of travels during 1700-1701. Speck (1946) presents an account of Catawba hunting, fishing and trapping techniques based on his interviews with elderly informants in the early twentieth century.

As detailed by Brown (1966), the Catawba Nation has a complex history of trading, wars, alliances and amalgamation with other groups. Most of these groups were Souian-speaking, and the Catawba were thus set apart from the more numerous Iroquoian-speaking Cherokee to the north-west and the Muskogean groups to the south and west. Early accounts generally indicate that the South Carolina Piedmont, except for the Catawba and several smaller groups, was sparsely occupied during most of the Ethnohistoric period, and was reserved as communal hunting territory for the groups inhabiting its margins and perhaps several of the major river valleys.

#### Early European History

Trade in deer and other skins provided the first continuing contact by Europeans with Indian groups of the South Carolina Piedmont. This trade began early in the eighteenth century and, although there was early competition with traders from Virginia, Charleston soon dominated. By the mid-1700's the value of deerskin exports from Charleston exceeded all other exports and provided enormous profits (Brown 1966: 109). Such trade necessarily put strong pressure on traditional economic pursuits of Indian groups and may have led to dramatic changes in their economy, demography and social organization. Through the early 1700's most Carolina traders came from Charleston by way of Congaree Fort near present-day Columbia, then eastward up the Wateree-Catawba system. No early trading centers near the project area are known.

European settlement of the central Piedmont area began in the 1730's along major rivers. The first settlement near the project area was at present-day Camden. These early settlers included farmers, merchants, crafts people, and Indian traders. A major influx of settlers into the Piedmont began in the late 1750's as Scotch-Irish refugees moved into the area from settlements in Virginia and Pennsylvania because of attacks by Indians there during the French and Indian War (Oliphant 1964: 125). Scotch-Irish farms became dominant in the area by the late

1700's. Their major cash crop was tobacco, which was shipped overland to merchants in Virginia.

The introduction of new varieties of cotton and the development of the cotton gin at the end of the eighteenth century had dramatic effects on the economy of the Piedmont. Cotton agriculture was extremely productive and large areas of Piedmont forest were cleared for the first time. The plantation system became dominant over the family farm, emphasis on cotton replaced that on tobacco and diversified farming, and large numbers of African slaves were imported into the region (Oliphant 1964: 216-217; McMaster 1946: 36-37).

This cotton agriculture system was ecologically disastrous and self-destructive (Oliphant 1964: 216-217; Trimble 1974). Massive forest clearing and poorly designed tillage and conservation methods soon caused severe soil depletion and erosion. Cotton profits were so large, however, that plantation owners were able to make up for this loss by greatly expanding their holdings and their operations, first in adjacent lands in the Carolina Piedmont and then by wholesale migrations in the mid-1800's to new lands to the west, particularly Mississippi. Even though yields and profits continued to decline, new owners, sharecroppers, and tenant farmers were locked into the cotton system because of extremely low prices of other crops. Not until the first quarter of the twentieth century, with increased prices for legume crops, cattle and livestock, and timber and with the increased importance of manufacturing, did the cotton monoculture system change. The Piedmont today has a low population density and consists mostly of forest regrowth, pine plantations and scattered patches of farmland and pasture.

#### Impacts to Archeology of Historic Land Use

The cotton agricultural system employed in the Piedmont in the nineteenth and early twentieth centuries resulted in tremendous erosion (see Trimble 1974). Cotton was planted in rows generally running down slopes to obtain better drainage necessary because of the clay substrate underlying the top 8-10 inches of soil. The heavy and sudden rains characteristic of the South Carolina Piedmont resulted after just a few years in complete loss of soil and formation of large gullies on the gentle hillslopes. Investment in terracing and contour farming was not profitable because of the high value of cotton in relation to the low value of land during the early 1800's. In addition, other crops, such as legumes which could have reduced erosion and allowed replenishing of soil nutrients brought such low prices that it was not economical to plant them. It was more profitable to farm an area intensively until the soil was exhausted or eroded and then buy, clear and plant new land. Abandoned land continued to erode.

Erosion of upland soils quickly clogged the streams and rivers of the Piedmont with large sediment loads. Large rainstorms quickly produced great runoff and major flooding occurred. This flooding, combined with direct hillslope erosion, covered the rich soils of the stream and river bottoms with up to several feet of silt with low productivity. Increased sediment loads caused the streams and rivers of

the Piedmont to aggrade, aggravating the flooding problem and causing a dramatic rise in the water table in stream valleys. Swamps were created in many of these stream valleys. Figure 2, after Trimble (1974) shows this development in a typical Piedmont stream valley.

The erosion of the uplands and sedimentation of the streams and river bottoms had dramatic effects not only on the agricultural productivity of the region as discussed in the preceding section, but also on the archeological record. This archeological record had been preserved in the soil for at least 10,000 years with minimal disturbance. During the 1800's, however, upland erosion dislocated and deflated artifacts and destroyed features indicative of past construction and other activities. Sedimentation of stream bottomlands covered over archeological deposits with up to several feet of silt and slopewash. While this sedimentation blanket may protect archeological deposits, it biases our understanding of them because it makes sites extremely difficult to detect, or to study if discovered.

Changes in agricultural practices and a shift to livestock and timber production as well as manufacturing have greatly decreased erosion in the Piedmont since the early 1900's and the region is recovering economically. The damage, however, and biases introduced to the archeological record cannot be changed. It is incumbent upon the archeologist, therefore, to search for areas within the Piedmont where erosion was not so dramatic and where effects on the archeological record are minimal. Such minimally affected areas, and the archeological sites within them, are thus extremely significant in understanding the cultural heritage of the region.



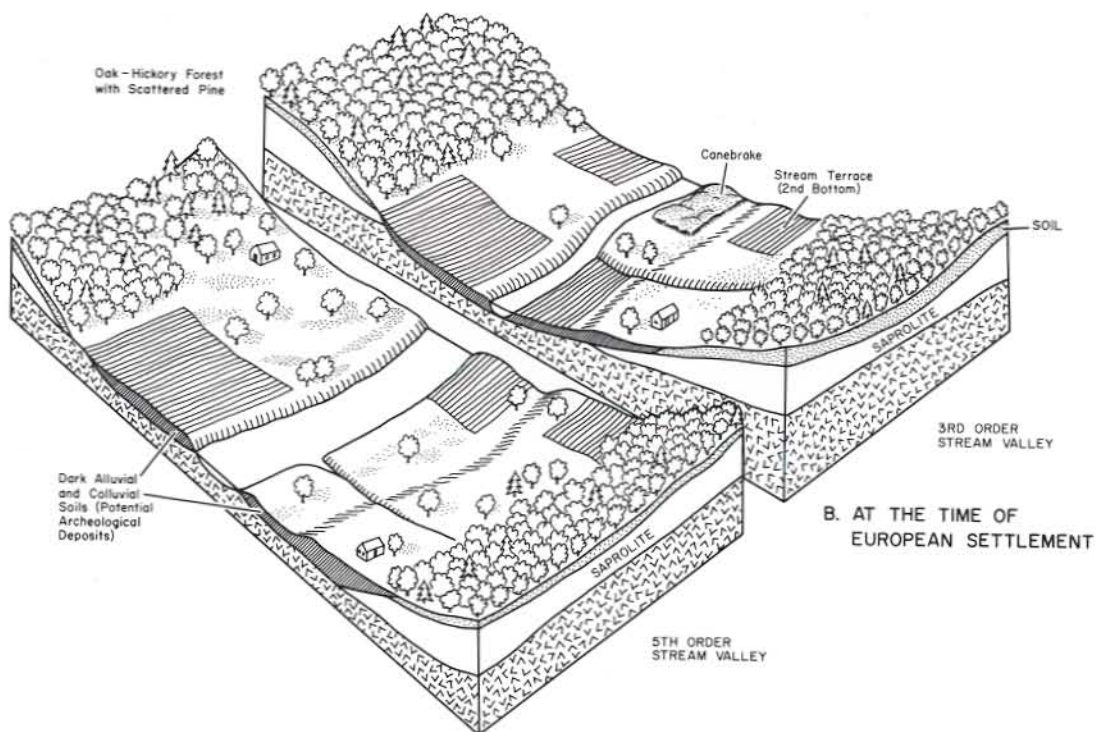
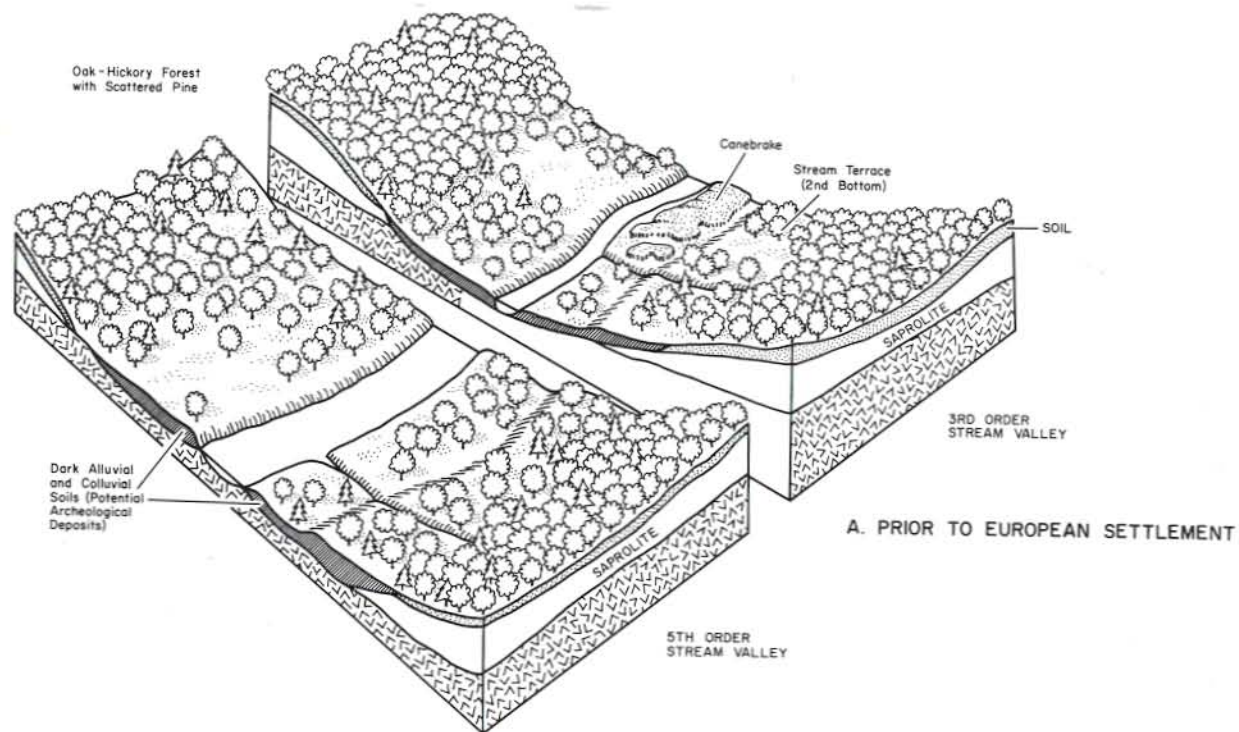
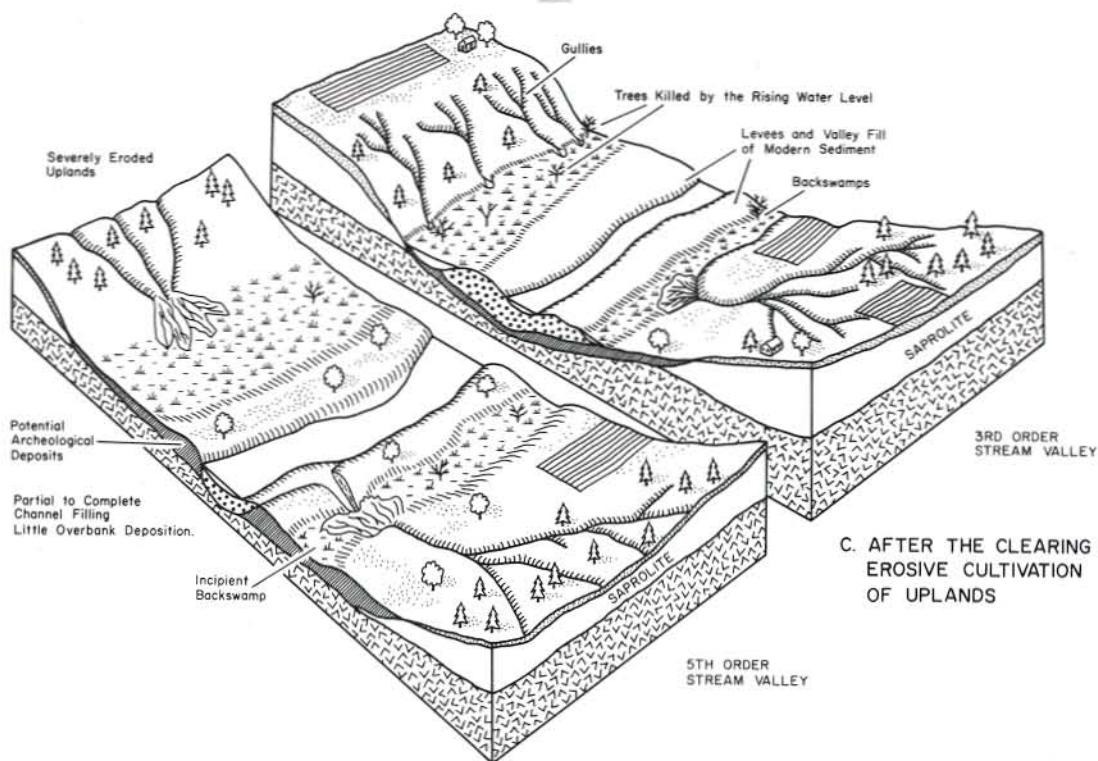
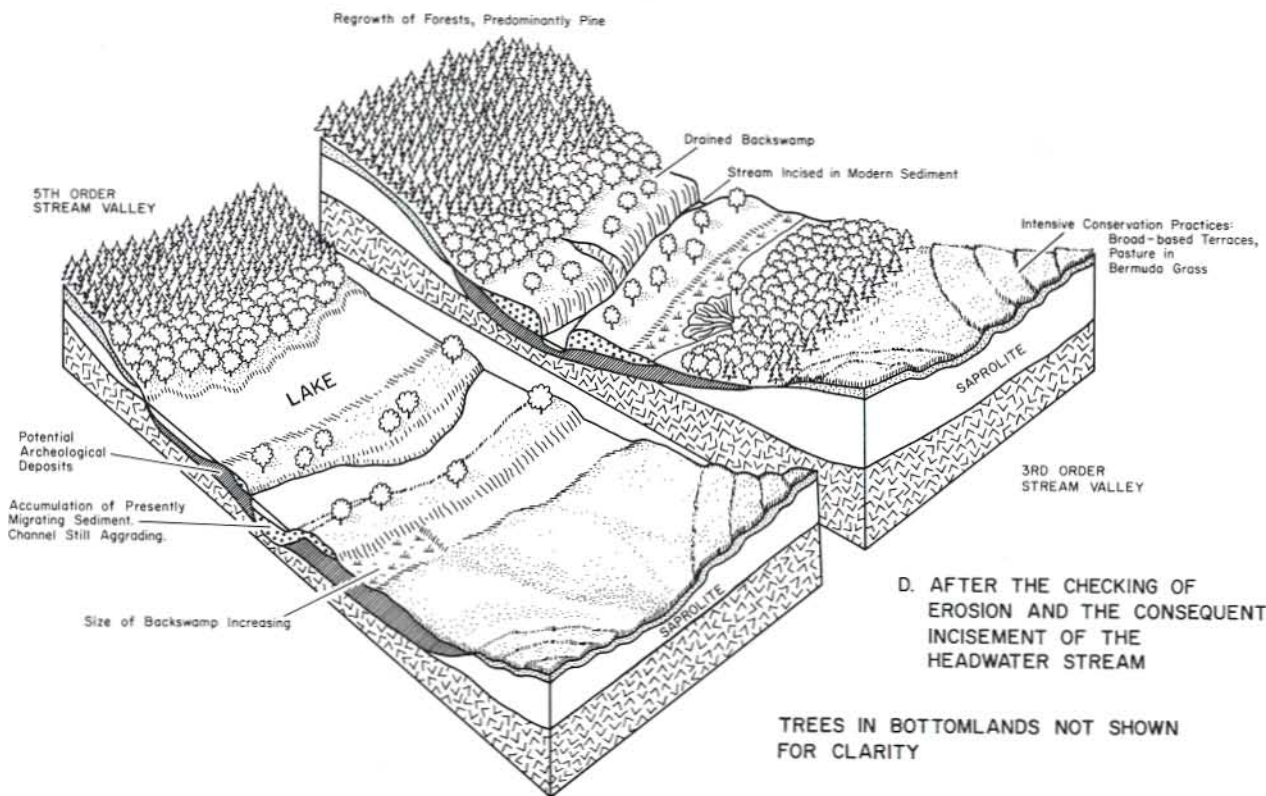


FIGURE 2. Erosion and sedimentation sequence in a Piedmont valley.



C. AFTER THE CLEARING AND EROSION CULTIVATION OF UPLANDS



D. AFTER THE CHECKING OF EROSION AND THE CONSEQUENT INCISEMENT OF THE HEADWATER STREAM

TREES IN BOTTOMLANDS NOT SHOWN FOR CLARITY

FIGURE 2 (continued). Erosion and sedimentation sequence in a Piedmont valley.

## *SURVEY METHODS*

Before fieldwork on the survey began, early maps and documents were thoroughly checked for the presence in the project area of known historic and archeological sites. The National Register of Historic Places was consulted, and no sites were found to be listed, or determined eligible for listing, for the project area. In addition, discussion with the staff of the State Historic Preservation Office indicated that no sites were presently under consideration for nomination to the National Register. The Statewide Archeological Inventory maintained by the State Archeologist and the Institute of Anthropology and Archeology were also consulted. No sites were known for the project area.

Lancaster District, including the project area, is shown by Robert Mills (1965) in his Atlas of South Carolina originally published in 1825. Two mills are shown near but outside of the project area on Gill's Creek. One is downstream from the project area and one is upstream. A tavern adjacent to the upstream mill is also indicated. None of these sites will be affected, however, by the Cane Creek 18A inundation project.

Although no sites were already on record or indicated by early maps for the project area, previous work in the region discussed above showed a strong possibility that undiscovered sites may exist. A strategy was developed for field investigation to meet the following goals.

- (1) Estimation of the extent, nature and temporal placement of archeological resources in the project area.
- (2) Evaluation of the impact of historic land use on the archeological record in the project area.
- (3) If sites are found, estimation of their significance to regional archeological research by gathering data relevant to the following problem domains.
  - (a) testing of settlement-subsistence patterns hypothesized by House and Ballenger (1976) and Brooks (n.d.);
  - (b) testing and refinement of culture history sequences developed by Coe (1964), Phelps (1964) and others;
  - (c) identification and analysis of raw materials used for prehistoric stone tool manufacture (following House and Ballenger 1976);
  - (d) investigation of early historic settlement patterns in the inter-riverine Piedmont, particularly following the approach used by Lewis (1975) to test for patterns indicating a frontier adaptation.

- (4) Testing and evaluation of site discovery techniques designed for wooded and grassed areas with minimal ground surface visibility.

Site discovery methods used involved inspection of the ground surface for artifacts and archeological features and excavation of subsurface tests where the surface is obscured by vegetation or where archeological deposits may be buried. It was expected that within the project area, pasture and woods would predominate, and reliance would have to be placed on subsurface testing rather than surface examination. This proved to be the case. Accordingly, a plan was devised and implemented involving the regular spacing of subsurface tests over the project area. Subsurface tests 1 foot square were placed every 100 feet along transects of the valley running perpendicular to the general orientation of Gill's Creek and spaced 1,000 feet apart (see Fig. 3). A portion of the project area was sampled more intensively using this method by placing transects at 200-foot intervals on the north side of the valley near the proposed dam structure (see transects 2, 3, 4 and 5, Fig. 3). In addition to subsurface tests along transects, all visible ground surface was carefully examined for artifacts and the Gill's Creek stream banks were cleaned and inspected at various intervals. Areas subjectively judged to have a high probability of site occurrence, such as elevated knolls within the stream bottom, were isolated and inspected. The systematic subsurface testing program, in addition to providing for site discovery, allowed the evaluation of potential impact to the archeological record by historic land use.

Three prehistoric sites were discovered using these techniques. When a site was discovered, additional subsurface tests were excavated to determine site extent, depth and to gather a complete or representative collection of artifacts. In addition to subsurface tests, attempts were made to gather all material possible from the surface, but this was feasible at only one of the three sites. All artifacts collected were bagged and labeled by their location and notes and photographs were taken of the sites and the surrounding area. A complete discussion of the sites and analyses performed is provided in the following section, along with an evaluation of the survey techniques.

After fieldwork was completed all artifacts were cleaned and cataloged. These artifacts and all notes, photographs and other data will be curated by the Institute of Archeology and Anthropology for use and re-evaluation by future workers. In addition, standard forms were completed for the sites and filed in the Statewide Archeological Inventory at the Institute of Archeology and Anthropology.



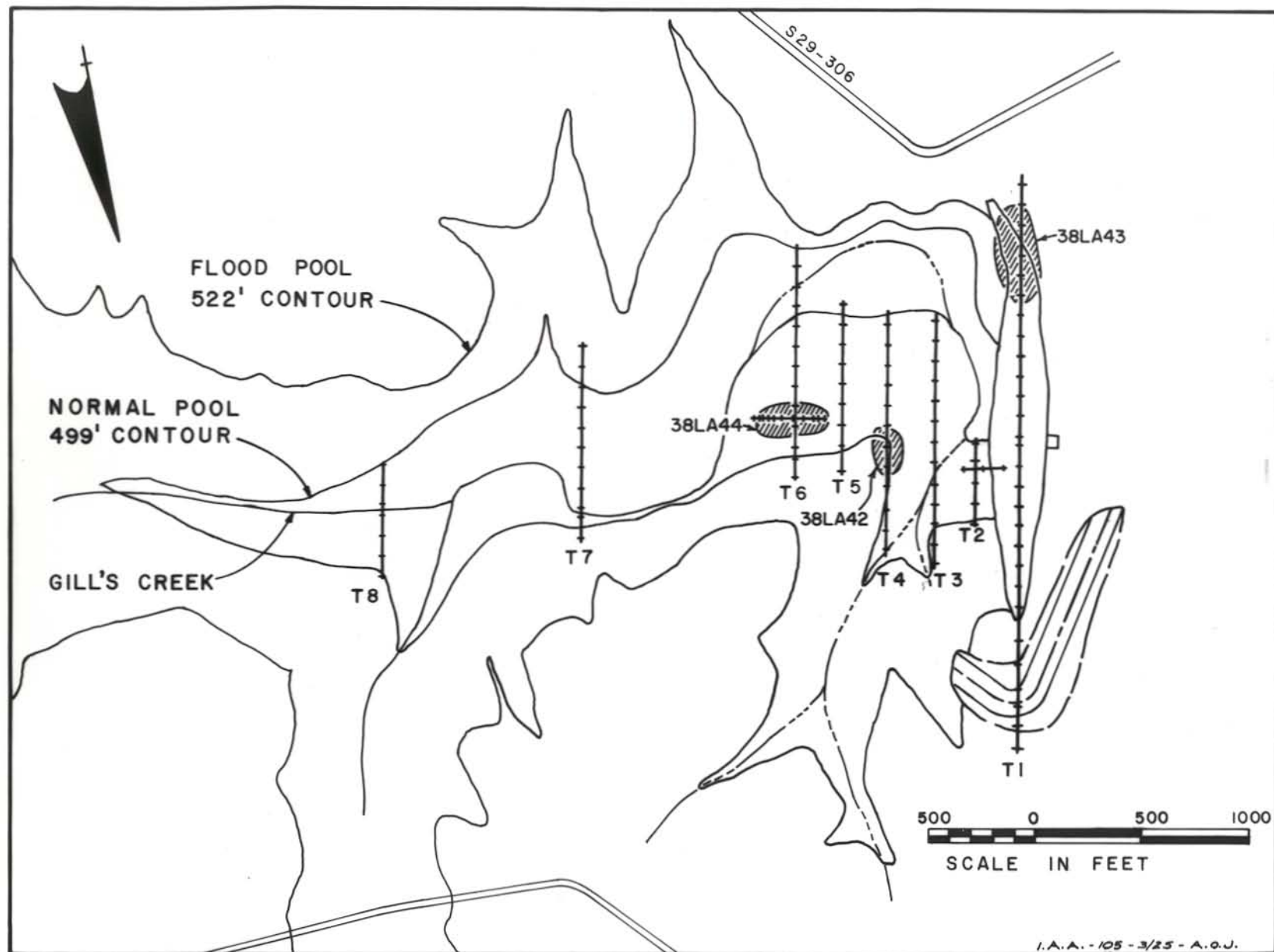


FIGURE 3. Testing transects located in the Cane Creek 18A Reservoir on Gill's Creek, Lancaster County, South Carolina.

## SURVEY RESULTS

### Effectiveness of Field Techniques

Field techniques employed are thought to have been effective in providing an adequate sample of potential sites within the project area. The entire project was covered on foot and all visible ground surface was examined for the presence of artifacts. Such visible ground surface was, however, extremely restricted within the project area, limited to only a few areas where trees had recently been timbered or had overturned and where the surface of an abandoned logging road was eroding. One site, 38LA43, was located in this abandoned logging road. Opportunistic surface examination, however, had limited value in the project area.

Probably over 95% of the project area was vegetated, with a thick mat of pasture covering about one-third of the area and mixed pine bottomland hardwood and shrubs and leaf and needle litter covering the other two-thirds (see Figs. 4 and 5). Subsurface tests along transects in these areas allowed discovery of two sites: 38LA42 in a young pine stand and 38LA44 in pasture. No artifacts were found on the surface at these sites; they would not have been found without the use of subsurface tests.

Excavation of subsurface tests along transects has recently been increasingly employed as a site discovery method for surveys of vegetated areas (see Brockington n.d.; Brooks 1977; Taylor and Smith 1978; Brooks n.d.; Green and Brooks 1978; House and Ballenger 1976; South and Widmer 1976; Chartkoff 1978; Lovis 1976). Transects are an effective and efficient sampling technique for locating sites and, once located, for defining their extent and internal characteristics (see especially South and Widmer 1976; Chartkoff 1978). There is a problem, however, in estimating what is not found by use of such methods during surveys. Relevant variables to this problem are the spacing between transects, their orientation, spacing and size of subsurface tests along the transects, as well as artifact density and configuration within sites. Although many sites are found using small subsurface tests along transects, House and Ballenger (1976) and Brooks (n.d.) postulate that these may be lucky finds and that tests one meter square or smaller may not yield a single artifact even though placed within one of the relatively numerous, small, low density lithic scatters common in the Piedmont. This problem must remain unresolved until experimental and carefully controlled studies are undertaken. Until that time we can be confident that large sites with relatively high artifact density will be discovered. The 1 foot square tests used during this survey were adequate to locate two small, low-to-moderate density sites. If larger and more dense sites were present, they should also have been detected.

A problem with small subsurface tests as a site discovery technique was evident in the project area, however. Such small tests are not efficient for detecting deeply buried sites or sites located under the present water table. As will be discussed in the section below, most of the project area is covered by the sedimentation generally characteristic of Piedmont bottomlands described above.



FIGURE 4. Mixed bottomland hardwood forest, Gill's Creek valley.



FIGURE 5. Bottomland pasture, Gill's Creek valley.

### Potential Impact Within the Project Areas of Historic Erosion

Subsurface tests showed that the first bottoms of Gill's Creek valley were heavily silted over. Undifferentiated, light brown, clayey silt extended from the surface to at least about 4 feet near the creek and to at least about 2 feet near the margins of the bottomland. It is not known how much farther these relatively recent deposits extended as ground water was consistently encountered at 4 feet or less below the surface. In several large, slightly lower areas of the bottomland, water was standing although rains had not been frequent or heavy prior to the survey. In the upstream one-third of the project area most of the bottomland could properly be considered swamp. These conditions are undoubtedly the result of the erosional process described above resulting from historic land use practices.

Although it was quickly discovered during the fieldwork that there was little chance of discovering potential sites buried under such sediment and lying below the present water table, subsurface tests were continued to monitor the extent of the sediment and to locate potential historic remains that may have been more recently covered. No sites were located, however, in the bottoms. All three discovered sites occurred on the upland hillslopes: 38LA42 was located at the slope edge just above the bottomland; 38LA43 on a low upland knoll-like remnant extending into the bottomland; and 38LA44 on a small, relatively gently sloping area approximately halfway up the valley's southern wall. Potential for site discovery was thus limited to the margins of the project area in the eastern lower half of the valley. In the upstream half of the valley, heavy sedimentation and swampy bottomland extended completely across the project area. If buried sites are indeed present in the bottomland area, however, they are probably not vulnerable to impact by the inundation planned.

Impact of past erosion on the three sites located is difficult to estimate, although it is likely to have occurred. At sites 38LA42 and 38LA44, artifacts found were located just under the present vegetation and a very thin soil layer, and on top of red-orange clay substrate. At 38LA43 artifacts were found on the eroded clay hillslope surface. It is probable that at all three sites artifact dislocation and deflation have occurred, and features destroyed if once present. It is difficult to determine whether the small size, low density, and lack of observable internal patterning is representative of the original occupation or due to the heavy erosion of the past 150 years.

### Analyses Performed

Given the small number of sites located, the few artifacts from each site, the physiographic homogeneity of the project area (especially the restricted area of potential site discovery), and the questionable representativeness of the samples recovered, few analyses could be



legitimately performed. Only one artifact, a probably hafted biface from 38LA43, fit an established morphological category which could be considered diagnostic of a cultural-historical period or phase.

Assemblages from the three sites discovered were functionally studied following generally House's and Ballenger's (1976) analyses of inter-riverine Piedmont lithic scatters. House and Ballenger (1976: 104-105) postulate three basic site types in the inter-riverine Piedmont (for probable Archaic lithic scatter sites). These are habitation, extractive, and quarry/workshop sites. In general, quarry sites are distinguished by large numbers of unspecialized flakes and chunks (of quartz), a relative few broken biface fragments, and little else. Quarry sites thus have a relatively high artifact density but a low artifact variability. Habitation sites also are expected to have relatively high artifact density; however, they are predicted to have a high artifact variability resulting from the wider range of activities being carried out at habitation sites. In addition, habitation sites are expected to contain fire-cracked rock as evidence of cooking activities, and for Late Archaic and later sites, steatite or pottery sherds.

Extractive sites are sites of limited occupation or use and may represent activities such as small hunting camps, plant collection or woodworking loci, or butchering stations. We do not yet know enough about the archeologically recoverable outputs of these activities to differentiate them with confidence. Extractive sites are indicated under House's and Ballenger's (1976: 105) hypotheses by low artifact density, small site size, high proportions of flakes from late stage biface reduction or resharpening, low proportions of broken tools, and little else.

House and Ballenger (1976: 103-104) recorded the topographical position of sites within the I-77 survey area and suggested that habitation sites tend to be located on elevated areas overlooking streams. In addition, House and Ballenger (1976: 104) indicate that sites in the I-77 survey area tend to be located on south-facing slopes and on level areas. All of the sites discovered in the Cane Creek 18A project area were, of course, on elevated areas above streams, and two of the three sites located were on south-facing, very gentle slopes. However, the largest, densest site, perhaps a habitation site, was located on a north-facing, gently sloping hillside. The meager data from the Cane Creek 18A project area is thus not clear cut or very helpful in evaluating the topographic location hypotheses of House and Ballenger.

House and Ballenger (1976: 94-102) in their analysis of lithic artifacts put forward hypotheses related to each other in a "biface thinning flake model". This model describes the manner of production of biface tools and the expected nature of archeologically recoverable outputs. House and Ballenger predict that activities performed at a site, and thus site type, can be inferred from the numbers of different kinds of flakes, their sizes, and their proportions to bifacial tools

discovered at the site. House and Ballenger (1976: 97-99) set up indexes of "biface discard" and "early stage reduction" and evaluated the size variability of thinning flakes from a series of sites. These analyses, however, were not helpful to House and Ballenger (1976: 99) in inferring site activities; the lack of conclusive patterning suggested to House and Ballenger that quartz as a raw material may more properly be viewed as a "non-quarried" resource expediently procured, flaked, used and discarded (1976: 99). Their biface thinning flake model would thus not be applicable to Piedmont quartz artifact scatter sites because the assumptions of quarrying and curating would not be met. In view of these conclusions by House and Ballenger, no attempts were made with the small data set recovered from the Cane Creek 18A project to test the biface thinning flake model.

### Site Descriptions and Evaluations

38LA42. This site is a small lithic scatter approximately 150 feet in diameter and located on a small tip or point of gently sloping hillside as it fingers out into the Gill's Creek bottomland (see Fig. 3). The site is generally south-facing, although the slope is very gentle, about 1 foot in 10. Artifacts were found by sub-surface tests in and just below topsoil in the orange clay substrate, with the deepest artifacts coming from less than 6 inches below the surface. No artifacts were found on the surface, as visibility was limited by a thick mat of grass in the pasture at the southern and eastern limits of the site and by heavy needle litter in the young (ca. 10 years old) pine stand in the center of the site.

Artifacts found are listed in Table 2. They appear to meet the proportions described by House and Ballenger (1976: 105) as indicative of extractive sites. This assignment is supported by the small size and low artifact density at the site. One relatively large biface fragment found at the site (see Fig. 6) may be indicative of butchering at the site. All material was quartz.

No features were found at 38LA42. It appears that past erosion may have destroyed them if they were once present. This erosion also may have deflated the artifacts to their present position on top of the clay substrate and may have dislocated them horizontally. Past timbering at the site has also undoubtedly moved artifacts from their original position.

The disturbed nature of the site and the low density of artifacts indicate that 38LA42 has little potential for further study. No further work is recommended.

38LA43. This site was discovered in an abandoned, eroding logging road while walking a transect (see Fig. 3). Although several subsurface tests were excavated, all artifacts found came from the eroded yellowish

TABLE 2

## ARTIFACE SUMMARY, CANE CREEK RESERVOIR 18A

Site	38LA42	38LA43	38LA44
<u>Artifacts</u>			
Quartz projectile point	0	1	0
Quartz biface fragments	3	11	4
Quartz uniface fragments	0	1	0
Quartz flakes	7	41	23
Slate flakes	0	3	0
Modern ceramics	0	2	0

orange clay surface. Natural quartz and igneous/metamorphic rock were abundant in the site area. Artifacts recovered are presented in Table 2. One quartz projectile point is similar to the Savannah River type (Coe 1964) and the Otterre type (Keel 1976) described for the Late Archaic in the Piedmont. Three slate flakes were also recovered.

The abundance and diversity of artifacts at 38LA43 may indicate that the site was a small habitation site during the Late Archaic. It may be, however, that the site was the locus of a series of small, temporary extractive occupations. Slate flakes and artifacts are common in Late Archaic assemblages (House and Ballenger 1976); their presence over much of the Piedmont during this period may indicate wide-ranging trade relationships or movement to obtain this raw material thought to be limited primarily to south-central North Carolina and adjacent areas (House and Ballenger 1976).

38LA43 is highly eroded and has been greatly damaged by timbering. Artifacts are scattered over several hundred feet of abandoned roadway on a relatively flat to steeply sloping hillside. Subsurface tests placed along the transect and in areas adjacent to the roadway failed to produce additional artifacts. All visible remains were collected; the site is not considered to have further potential, and no additional work is recommended.

38LA44. This site was located by subsurface testing along a transect on a low hillslope remnant on the edge of the Gill's Creek bottom. Artifacts recovered are indicated in Table 2. All material was quartz. No artifacts were recovered from the surface as visibility was limited by thick pasture grass (see Fig. 5). Artifact density and diversity were low, and site size was small, indicating that 38LA44 represents a short-term extractive camp. No diagnostic materials were

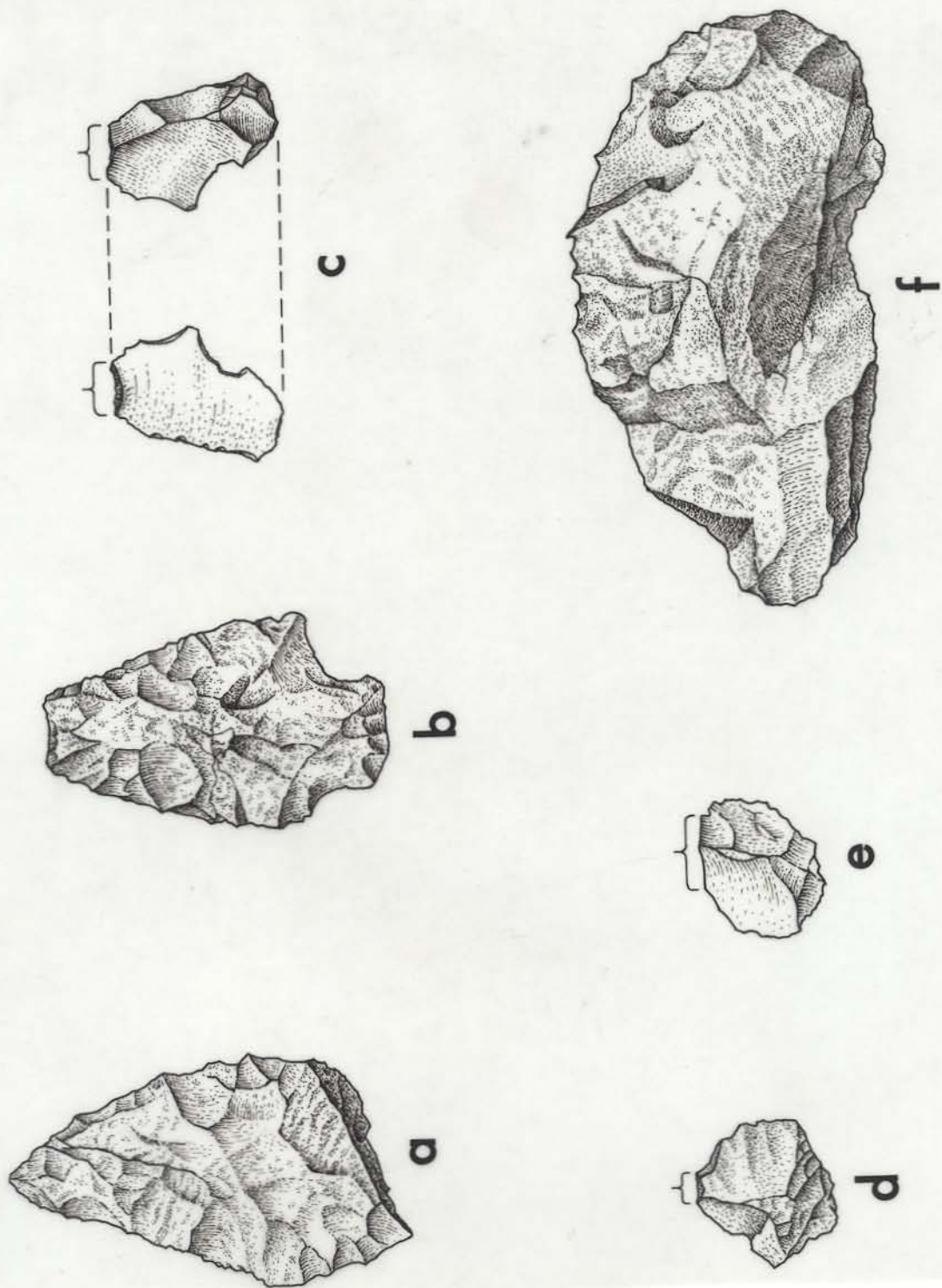


FIGURE 6. Selected artifacts, Cane Creek Reservoir 18A: a. quartz biface fragment (38LA43); b. quartz Otarré projectile point (38LA43); c. slate flake (38LA43); d. quartz flake (38LA43); e. quartz flake (38LA43); f. quartz biface (38LA42).

recovered, but the absence of pottery may indicate temporal placement during the Archaic period.

All artifacts were found 3-6 inches below the surface at the top of the orange clay substrate. Erosion is indicated for the site. It appears to have potential for little further study and none is recommended.

### *CONCLUSIONS*

Three small sites were found during the survey of Cane Creek Project 18A. These sites have all been heavily disturbed in the past and offer little potential for further study. The collection and recording of data during the survey can be considered, in this case, as mitigation of potential adverse effect to these sites by the planned construction and inundation project.

It was not possible because of heavy sedimentation and high water table level, to estimate the potential for archeological sites in the bottomland of Gill's Creek valley within the project area. The inundation project should have little impact, however, on such deeply buried sites, if they are present. It is the recommendation of this report that appropriate consideration has been given the cultural resources potentially affected by the Cane Creek 18A project and that no further survey or study is necessary.

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